REMARKS

Reconsideration and withdrawal of the objections and rejections of the application are requested. The Examiner is thanked for courtesies extended and helpful suggestions made during the interview on June 3, 2004.

I. STATUS OF CLAIMS AND FORMAL MATTERS

Claims 11, 16-18, 20-22 and 30-33 are pending in this application. Claims 11, 16, 18, 20-22 and 30 are amended; claims 31-33 are added. Support for the amended claims is found throughout the specification. Particular support for new claims 31 and 32 can be found in the paragraph beginning on page 12, line 8 and throughout the Examples. No new matter is added by this amendment.

It is submitted that the claims, herewith and as originally presented, are patentably distinct over the prior art, and that these claims are in full compliance with the requirements of 35 U.S.C. §112. The amendments of and additions to the claims, as presented herein, are not made for purposes of patentability within the meaning of 35 U.S.C. §101, §102, §103 or §112 and are not narrowing amendments. Rather, these amendments and additions are made simply for clarification and to round out the scope of protection to which Applicants are entitled. Furthermore, it is explicitly stated that the herewith amendments should not give rise to any estoppel, as the herewith amendments are not narrowing amendments.

II. THE REJECTION UNDER 35 U.S.C. §112, 1ST PARAGRAPH IS OVERCOME

Claims 11, 16-18, 20-22 and 30 were rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enablement. The rejection is traversed.

The Office Action alleges on page 4 that "the claims are clearly intended to encompass a variety of species of retroviral particles based on a non-primate lentiviral genome, that do not necessarily contain a functional gag protein or packaging signal." The Examiner's attention is directed to claim 30, from which all other pending claims depend, either directly or indirectly. Contrary to the statement in the Office Action, claim 30 requires that the claimed system and particles produced therefrom contain, *inter alia*, gag and a packaging sequence. The teachings in the specification clearly enable the skilled artisan to practice the claimed invention with no undue experimentation.

Reconsideration and withdrawal of the enablement rejection are requested.

III. THE ART REJECTIONS ARE OVERCOME

Claims 16-18 and 20-22 were rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Olsen. Claims 16-18, 21, 22 and 30 were rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Harmache. Claims 16-18, 20-22 and 30 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Harmache taken with Naldini *et al.* and Chang. Claims 11, 16-18, 20-22 and 30 were rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-62 of U.S. Patent No. 6,312,682 in view of Olsen. The rejections are traversed and will be addressed collectively.

At the time of the claimed invention, the state of art, as a whole, in the production of lentivirus-based retroviral vectors led the ordinary artisan to rely on the use of the accessory gene, *tat*, in order to make the vector systems functional.

For example, Olsen teaches an EIAV vector system employing all accessory genes, including the *tat* accessory gene. Olsen fails to teach or suggest the removal of any accessory gene from the system, nor does it provide motivation for removal of any accessory genes from the system. In particular there is no teaching, suggestion or motivation for making the accessory gene, *tat*, nonfunctional in the system. As such, the ordinary artisan, armed with the Olsen disclosure would find no guidance for making or using the claimed vector system, which lacks functional Tat, as recited in claims 30 and 16.

Likewise, Harmache *et al.* fails to teach how to make and use a vector system as claimed, *i.e.*, having nonfunctional Tat, and being capable of producing lentivirus-based retroviral particles. Harmache *et al.* relates to determining the function of CAEV Tat on CAEV viral replication in goat cells. While Harmache *et al.* teaches that Tat is not necessary for viral replication in certain goat cells (CFSM1 cells), they also teach that Tat is necessary for viral replication in other goat cells (GSM cells). As such, the teachings of Harmache *et al.* would lead the ordinary artisan to understand that Tat has an essential function on replication in certain cells, and that the so-called dispensability of Tat is highly dependent on cell type, origin, and differentiation and activation state. See page 5452, 2nd column.

Tantamount to this, Harmache *et al.* fails to teach or even suggest transfection of the proviral DNA into a non-goat cell line, *e.g.*, human cells such as 293 cells, and subsequent viral production and expression in the absence of Tat. As such, one of ordinary skill in the art would

be left to conclude that Harmache *et al.* fails to provide guidance and direction or even mere motivation for the production and use of a vector system wherein *tat* is removed and wherein the vector system produces functional viral particles.

The state of the art as a whole, at the time of the claimed invention, fails to remedy the deficiencies of either Olsen or Harmache *et al.* In particular, the state of the art, as represented by Chang and/or Naldini fails to teach and/or suggest the claimed invention. Rather, Chang teaches that, in an HIV system, Tat is required for efficient HIV-1 vector production. Chang teaches in every instance that the modifications thought to be important in eliminating Tat from the vector system, in fact, failed to support a vector system that produced functional viral particles. As such, the ordinary artisan would have been left with the general understanding that Tat is necessary to produce functional viral particles in a lentivirus-based retroviral vector system.

Likewise, Naldini *et al.* fails to add any teachings to the state of the art that would lead the skilled artisan to arrive at the claimed invention. Rather, Naldini *et al.* implies that certain "routine" modifications may be performed in order to eliminate Tat from a functional lentiviral vector system. However, as discussed above, the artisan would not be able to turn to the art for identification of such modifications because they were not taught in the art at the time of the invention. Moreover the teachings of Naldini *et al.* do not provide the artisan with the guidance for performing such modifications. In fact, Naldini *et al.* fails to teach any vector system having Tat removed from the system. Rather, Naldini *et al.* indicated that they only actually used the modified transfer vector in a cell in the absence of a packaging vector. See column 10, lines 31-35. This is not equivalent to a lentiviral vector system that includes sequences necessary for the production of viral particles. Therefore, the ordinary artisan must conclude that, without specific guidance and direction for a vector system in which Tat is absent or nonfunctional, the teachings of Naldini *et al.*, alone or in combination with the knowledge generally available at the time of the claimed invention, are insufficient to provide even a suggestion that Tat can be made nonfunctional in a non-primate lentivirus-based retroviral vector system that produces functional lentivirus-based retroviral particles.

In light of the foregoing, reconsideration and withdrawal of the rejections under 35 U.S.C. §§102 and 103 are requested.

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CONCLUSION

As it is believed that this application is in condition for allowance an early notice to that effect is earnestly solicited. If, however, there remains any issue outstanding, the Examiner is invited to contact the undersigned for its prompt attention.

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